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| Module | **Lessons** | **Vocab and Tools** | **Standards** |
| Probability and Statistics (Module 5)  Probability and Statistics (Module 5)  Probability and Statistics (Module 5) | 1: Chance Experiments  2: Estimating Probabilities by Collecting Data  3: Change Experiments with Equally Likely Outcomes  4: Calculating Probabilities for Chance Experiments with Equally Likely Outcomes  5: Chance Experiments with Outcomes that are not Equally Likely  6: Using Tree Diagrams to Represent a Sample Space and to Calculate Probabilities  7: Calculating Probabilities of Compound Events  8: The Difference Between Theoretical Probabilities and Estimated Probabilities  9: Comparing Estimated Probabilities Predicted by a Model  10: Conducting a Simulation to Estimate the Probability of an Event  11: Conducting a Simulation to Estimate the Probability of an Event  12: Applying Probability to Make Informed Decisions  **Assessment A**  13: Populations, Samples, and Generalizing from a Sample to a Population  14: Selecting a Sample  17: Sampling Variability  18: Sampling Variability and the Effect of Sample Size  ***Review MAD from 6th grade***  22: Using Sample Data to Compare the Means of Two or More Populations  23: Using Sample Data to Compare the Means of Two or More Populations  **Assessment B** | New or Recently Introduced Terms  **Compound Event** (A *compound event* is an event consisting of more than one outcome from the sample space of a chance experiment.)  **Inference** (*Inference* is the act of drawing conclusions about a population using data from a sample.)  **Long-Run Relative Frequency** (The proportion of the time some outcome occurs in a very long sequence of observations is called a *long-run relative frequency*.)  **Probability** (Probability is a number between and that represents the likelihood that an outcome will occur.)  **Probability Model** (A *probability model* for a chance experiment specifies the set of possible outcomes of the experiment—the sample space—and the probability associated with each outcome.)  **Random Sample** (A *random sample* is a sample selected in a way that gives every different possible sample of the same size an equal chance of being selected.)  **Simulation** (A *simulation* is the process of generating “artificial” data that are consistent with a given probability model or with sampling from a known population.)  **Tree Diagram** (A *tree diagram* consists of a sequence of nodes and branches. Tree diagrams are sometimes used as a way of representing the outcomes of a chance experiment that consists of a sequence of steps, such as rolling two number cubes, viewed as first rolling one number cube and then rolling the second.)  **Uniform Probability Model** (A *uniform probability model* is a probability model in which all outcomes in the sample space of a chance experiment are equally likely.)  Familiar Terms and Symbols[[1]](#footnote-1)  Mean Absolute Deviation (MAD)  Measures of Center  Measures of Variability  Shape  Suggested Tools and Representations  Graphing Calculator  Dot Plots  Histograms | 7.SP.A.1 Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.  7.SP.A.2 Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. *For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.*  7.SP.B.3 Informally assess the degree of visual overlap of two numerical data distributions with similar variability, measuring the difference between the centers by expressing it as a multiple of a measure of variability. *For example, the mean height of players on the basketball team is greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable*  7.SP.B.4 Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. *For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book*  7.SP.C.5 Understand that the probability of a chance event is a number between and that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near indicates an unlikely event, a probability around indicates an event that is neither unlikely nor likely, and a probability near indicates a likely event.  7.SP.C.6 Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. *For example, when rolling a number cube times, predict that a or would be rolled roughly times, but probably not exactly times.*  7.SP.C.7 Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.   1. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. *For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.* 2. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. *For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?*   7.SP.C.8 Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.   1. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs. 2. Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., “rolling double sixes”), identify the outcomes in the sample space which compose the event. 3. Design and use a simulation to generate frequencies for compound events. *For example, use random digits as a simulation tool to approximate the answer to the question: If of donors have type A blood, what is the probability that it will take at least donors to find one with type A blood?* |

1. These are terms and symbols students have seen previously. [↑](#footnote-ref-1)